

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application.

1-87. (Canceled)

88. (New) A device for measuring a glucose concentration in a host, the device comprising:

a sensing mechanism operably connected to an electronic circuit and configured to continuously measure a signal associated with a glucose concentration in a host for a period of time; and

a membrane located over at least a portion of the sensing mechanism, wherein the membrane is configured to control a flux of oxygen and glucose, wherein the membrane comprises a silicone polymer, a polycarbonate, and a polyurethane, and wherein the device is capable of exhibiting, at a glucose concentration of about 400 mg/dL, no more than a 10% drop in sensor output over a range of pO_2 from about 150 mm Hg down to about 30 mm Hg.

89. (New) The device of claim 88, wherein the membrane comprises an enzyme layer comprising an enzyme.

90. (New) The device of claim 88, wherein the membrane is monolithic and homogeneous.

91. (New) The device of claim 88, wherein the membrane is monolithic and heterogeneous.

92. (New) The device of claim 88, wherein the membrane has a thickness of from about 15 microns to about 60 microns.

93. (New) The device of claim 88, wherein the period of time is greater than about 3 days.

94. (New) The device of claim 88, wherein at least 95% of glucose concentration values measured by the signal are within 25% of one or more reference values over a useful life of the device, and wherein the one or more reference values are determined by analysis of blood.

95. (New) The device of claim 88, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to about 500 mg/dL or more.

96. (New) A device for measuring a glucose concentration in a host, the device comprising:

a sensing mechanism operably connected to an electronic circuit and configured to continuously measure a signal associated with a glucose concentration in a host for a period of time; and

a membrane located over at least a portion of the sensing mechanism, wherein the membrane is configured to control a flux of oxygen and glucose, and wherein the membrane comprises a silicone polymer, a polycarbonate, and a polyurethane;

wherein at least 95% of glucose concentration values measured by the signal are within 25% of one or more reference values over a useful life of the device, and wherein the one or more reference values are determined by analysis of blood.

97. (New) The device of claim 96, wherein the membrane comprises an enzyme layer comprising an enzyme.

98. (New) The device of claim 96, wherein the membrane is monolithic and homogeneous.

99. (New) The device of claim 96, wherein the membrane is monolithic and heterogeneous.

100. (New) The device of claim 96, wherein the membrane has a thickness of from about 15 microns to about 60 microns.

101. (New) The device of claim 96, wherein the period of time is greater than about 3 days.

102. (New) The device of claim 96, wherein the device is capable of exhibiting, at a glucose concentration of about 400 mg/dL, no more than a 10% drop in sensor output over a range of pO₂ from about 150 mm Hg down to about 30 mm Hg.

103. (New) The device of claim 96, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to about 500 mg/dL or more.

104. (New) A device for measuring a glucose concentration in a host, the device comprising:

a sensing mechanism operably connected to an electronic circuit and configured to continuously measure a signal associated with a glucose concentration in a host for a period of time; and

a membrane located over at least a portion of the sensing mechanism, wherein the membrane is configured to control a flux of oxygen and glucose, and wherein the membrane comprises a silicone polymer, a polycarbonate, and a polyurethane;

wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to about 500 mg/dL or more.

105. (New) The device of claim 104, wherein the membrane comprises an enzyme layer comprising an enzyme.

106. (New) The device of claim 104, wherein the membrane is monolithic and homogeneous.

107. (New) The device of claim 104, wherein the membrane is monolithic and heterogeneous.

108. (New) The device of claim 104, wherein the membrane has a thickness of from about 15 microns to about 60 microns.

109. (New) The device of claim 104, wherein the period of time is greater than about 3 days.

110. (New) The device of claim 104, wherein the device is capable of exhibiting, at a glucose concentration of about 400 mg/dL, no more than a 10% drop in sensor output over a range of pO₂ from about 150 mm Hg down to about 30 mm Hg.

111. (New) The device of claim 104, wherein at least 95% of glucose concentration values measured by the signal are within 25% of one or more reference values over a useful life of the device, and wherein the one or more reference values are determined by analysis of blood.